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PATENT APPLN. NO. 10/673,348
RESPONSE UNDER 37 C.F.R. §1.111

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REMARKS

The specification has been amended to correct an error in paragraph [0060]. The amendment to paragraph [0060] is supported in paragraph [0053] and Table 1.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori, JP 2000-012088 (hereinafter: "Mori"). Mori is cited as disclosing a negative electrode wherein the active material layer comprises particles of silicon or a silicon alloy dispersed in a binder, and the particles of silicon or silicon alloy have a range of mean diameter (0.01-100 μm) which overlaps the mean diameter of the primary particles recited in claim 1 of the application. The Office alleges that the active material layer is sintered under a non-oxidizing atmosphere (citing paragraph [0059] of the machine translation of Mori) and that the binder remains after sintering (also citing paragraph [0059] of the machine translation of Mori).

Applicants respectfully submit that Mori is insufficient to support a prima facie case of obviousness under 35 U.S.C. § 103(a) of the negative electrode, method of making a negative electrode, and lithium secondary battery of the present invention.

Applicants note, first, that Mori does not disclose that the particles of silicon or silicon alloy of the negative electrode of its invention are primary particles.

Second, Mori also does not disclose sintering of the active material layer. Paragraph [0059], cited by the Office as describing sintering of the active material layer, is believed to describe the preparation of silicon alloy particles used as the active material.

Applicants note that in another application the Office has cited paragraph [0061] of Mori as describing the sintering of an active material layer. However, paragraph [0061] of Mori describes drying at a temperature of 150 °C of a positive electrode active material layer paste applied to the surfaces of a current collector (An English translation of paragraph [0061] of Mori is enclosed with this response for the convenience of the Examiner). Drying of a positive electrode active material layer paste at a temperature of 150 °C is not sintering.

Notwithstanding the insufficiencies of Mori to support the Office's case of obviousness, applicants note that the comparative data in the specification provide evidence of non-obviousness sufficient to rebut any *prima facie* obviousness believed by the Office to be supported by Mori. Note, for example, the data of

Table 1 which demonstrate criticalness of the mean diameter of the primary particles of the active material particles of the negative electrode of the present invention and the data of Table 3 which demonstrate criticalness of sintering of the active material layer of the negative electrode.

Finally, also notwithstanding the insufficiencies of Mori to support the Office's case of obviousness, applicants have amended the claims to limit the binder to a polyimide (as originally recited in claim 8) and to recite that the sintering under a non-oxidizing atmosphere is at a temperature in the range of 300 - 450°C. This limitation is supported in paragraph [0023] of the specification.

Removal of the 35 U.S.C. § 103(a) rejection of the claims over Mori is believed to be in order and is respectfully solicited.

The foregoing is believed to be a complete and proper response to the Office Action dated May 5, 2006, and is believed to place this application in condition for allowance. If, however, minor issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of

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time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,

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Attachments: English Translation of paragraph [0061] of Mori

JP2000-12088A

[0061] (lines 21-27) The positive electrode mixture paste prepared above was coated on both surfaces of an aluminum film current collector having a thickness of 30 μm , by a blade coater and was pressed to fabricate by a roller press after being dried at a temperature of 150 $^{\circ}\text{C}$, and was cut to a predetermined size to prepare a positive electrode sheet in the form of a strip. Further, the positive electrode sheet was sufficiently dehydrated for drying by a far-infrared heater in a dry box (dry air having a dew point temperature of not greater than -50 $^{\circ}\text{C}$) to prepare the positive electrode sheet.